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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,248	03/13/2001	Ashfaq Hossain	Hossain 2	7720

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EXAMINER

ALI, SYED J

ART UNIT PAPER NUMBER

2127

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/804,248

Applicant(s)

HOSSAIN, ASHFAQ

Examiner

Syed J Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed October 18, 2004. Claims 1-25 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-7, 9-10, 15-18, and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sodan et al. ("Hierarchical Fuzzy Configuration of Implementation Strategies") (hereinafter Sodan).**

5. As per claims 1-4, Sodan teaches the invention as claimed, including a load-balancing unit adapted to apply fuzzy logic rules to sets of fuzzified network-related indicator values and to generate a selection index associated with each set of indicator values (Abstract; p.257; Fig. 7), wherein the unit comprises a load balancing switch, router, or programmed medium (p. 257).

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6. As per claims 5-6, Sodan teaches the invention as claimed, including the unit as in claim 1 further adapted to direct a request to a server associated with one of the generated selection indices (p. 250), the server being associated with a highest selection index (p. 254; Fig. 7).

7. As per claim 7, Sodan teaches the invention as claimed, including the unit as in claim 1 wherein each set of network-related indicator values is associated with a server (p. 255, 257).

8. As per claims 9-10, Sodan teaches the invention as claimed, including the unit as in claim 1 wherein the network-related indicator values comprise dynamic, time-dependent indicator values (Abstract, p. 250, 253, 257) associated with a response time, a number of active connections and a delivered throughput (Fig. 7).

9. As per claims 15, 16-18, and 20-21, Sodan teaches the invention as claimed, including a method for selecting Internet servers able to be implemented on the load-balancing unit of claims 1, 5-7, and 9-10, respectively (p. 250).

Claim Rejections - 35 USC § 103

10. **Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sodan.**

11. As per claim 8, Sodan does not specifically teach the invention as claimed, including the unit as in claim 1 wherein the fuzzy logic rules comprise 27 rules. "Official Notice" is taken that

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Sodan implements dynamic-load balancing using 72 fuzzy-logic rules (p. 257). However, Sodan permits refining and fine-tuning of the established rules if a more specialized solution will perform better (p. 251, 254). In addition to Sodan permitting a modification of the number of rules used, Applicant's specification indicates that the number of rules used is not fixed. Specifically, Applicant states on page 10, paragraph 0035 of the specification, "A smaller or greater number of rules may be used and still fall within the scope of the present invention".

12. As per claim 19, Sodan teaches the invention as claimed, including a method for selecting Internet servers able to be implemented on the load-balancing unit of claim 8 (p. 250).

13. **Claims 11-14 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sodan in view of Shibata et al. (USPN 5,939,925) (hereinafter Shibata).**

14. As per claims 11-14, Shibata teaches the invention as claimed, including the unit as in claim 1 further adapted to generate an area associated with each fuzzy logic rule and an aggregate area from a combination of areas associated with the fuzzy logic rules (Abstract, col. 11 lines 35-45) and generate the selection index from a center of gravity of the aggregate area (Abstract, col. 11 lines 35-45)

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15. It would have been obvious to one of ordinary skill in the art to combine Sodan and Shibata since Sodan fails to explicitly detail how the selection index is arrived at. Rather, the load balancing mechanism simply distributes the request to the server that is “best” suited to service that request based on the processing load at the moment. The “centroid” or “center of gravity” method is well established within the realm of fuzzy logic. Shibata provides a way of generating control variables, such as the claimed selection index, based on center of gravity calculations generated from fuzzy logic calculations. The “center of gravity” method would be beneficial in combination with Sodan especially since in the case where multiple servers may be suitable to service a request, the best server can be found based on an aggregate of parameters.

16. As per claims 22-25, Sodan teaches the invention as claimed, including a method for selecting Internet servers able to be implemented on the load-balancing unit of claims 11-14, respectively (p. 250).

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Azami et al. (US 2004/0047289) and Zahir Azami (US 2004/0005041) teach performing system-wide load balancing using fuzzy logic. Fuzzy logic is used to obtain a load approximation that is used in a probabilistic distribution function to determine how to balance a processing load.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Syed Ali
January 27, 2005



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